
Quality Assurance Project

*Niger Measles
Initiative Phase II
Final Report*

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List of Acronyms

CIMEFUR	<i>Circonscription Médicale de formation</i>
DHC	Departmental Hospital Center
DHD	Departmental Health Directorate
DPT1	First Dose of Diphtheria-Pertussis-Tetanus Vaccine
IEC	Information, Education and Communication
EPI	Expanded Program on Immunization
ESC	Epidemiology Surveillance Center
HEALTHCOM	Communication for Child Survival Project
HES	Health Education Session
HKI	Helen Keller International
HP	Health Post
DPT3	Third Dose of Diphtheria-Pertussis-Tetanus Vaccine
MC	Medical Center
MCH	Maternal and Child Health
MD	Medical District
MI	Measles Initiative Project
NC	Neighborhood Clinic
NDEPI	National Directorate for the Expanded Program on Immunization
NHIS	National Health Information Service
NUC	Niamey Urban Community
QA	Quality Assurance
QAP	Quality Assurance Project
RC	Rural Clinic
REACH	Resources for Child Health Project
UNICEF	United Nations Fund for Children
USAID	United States Agency for International Development

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ANNEX A

Niger Measles Initiative Phase II Report

1. Introduction

This report describes the results of the second phase of the Niger Measles Initiative Project. However, some discussion of the project's first phase is necessary to understand its evolution. The paper discusses the major activities undertaken, documented results, 1994 and 1995 vaccination data, difficulties encountered, conclusions, and some recommendations for the future.

Background

The Measles Initiative (MI) Project was developed to assist the National Expanded Program for Immunization (EPI) in Niger to improve the quality and coverage of immunization services. The project was financed by the U.S. Agency for International Development (USAID)/Africa Office and implemented under the framework of the Quality Assurance Project (QAP). The first phase, which ran from January 1992 until September 1993, was initially a joint effort of HEALTHCOM, QAP and REACH. The first phase covered only the Departments of Tahoua and Maradi, where a baseline assessment had been conducted. A second quality assurance project in Tahoua began during the first phase of the Measles Initiative. Since the two activities followed the same methodology, it was natural that the two projects collaborate under Phase II of the Measles Initiative. As a result, some Measles Initiative activities not completed by the end of the project will be followed up by QAP/ Tahoua.

Measles Initiative Phase I

Activities undertaken during the first phase of the project focused on improving management and quality of vaccination services and included training of personnel in: supervision, monitoring, process improvement, program

management, vaccination techniques and information, education, and communication (IEC). Some of the accomplishments in this phase included an expansion of the availability of vaccination services by opening 15 new vaccination centers--10 in the Tahoua Department and 5 in Maradi. In light of these results, the Government of Niger negotiated a continuation of the project, extending it to the Departments of Dosso, Diffa and the Niamey Urban Community (NUC). The Department of Maradi was dropped for Phase II to avoid duplication of efforts, since it was the site of the UNICEF Bamako Initiative Project. The MI Project second phase was originally expected to start in July 1994, following a planning mission coming from Bethesda. However, due to civil strikes and other delays in-country, it was not until a second mission in October 1994 that the technical workplan and the project budget were finalized with the National Directorate for the Expanded Program on Immunization (NDEPI) and a project office established. Activities were further delayed because it was not until January 1995 that the Project Coordinator could obtain his secondment from the civil service and was able to devote himself exclusively to the project. Completion of the Measles Initiative's second phase was originally scheduled for September 1995; however, due to sufficient funds, project activities were allowed to continue until December 1995, followed by a final project evaluation in January and February 1996.

The Measles Initiative Project's first phase objectives were to: 1) identify priority problems and determine necessary resources to improve them; 2) introduce quality assurance (QA) concepts through training, standards, monitoring, and problem-solving; 3) strengthen core support services, increase coverage, and decrease drop-out; 4) assess application of QA interventions, analyze impact, and disseminate findings. In Phase II, project focus was to increase vaccination completion rates in selected areas and achieve a 30% reduction in drop-out rates between DPT1 and measles through systematic service monitoring and process improvement.

Target Population

The total population of the four selected regions was estimated to be 3,702,689 inhabitants in 1995 (or about 40% of the total population of the country), including 174,026 children between the ages of 0 and 11 months, and 814,592 women of child-bearing age.¹ The following table shows the population served by the project in each department.

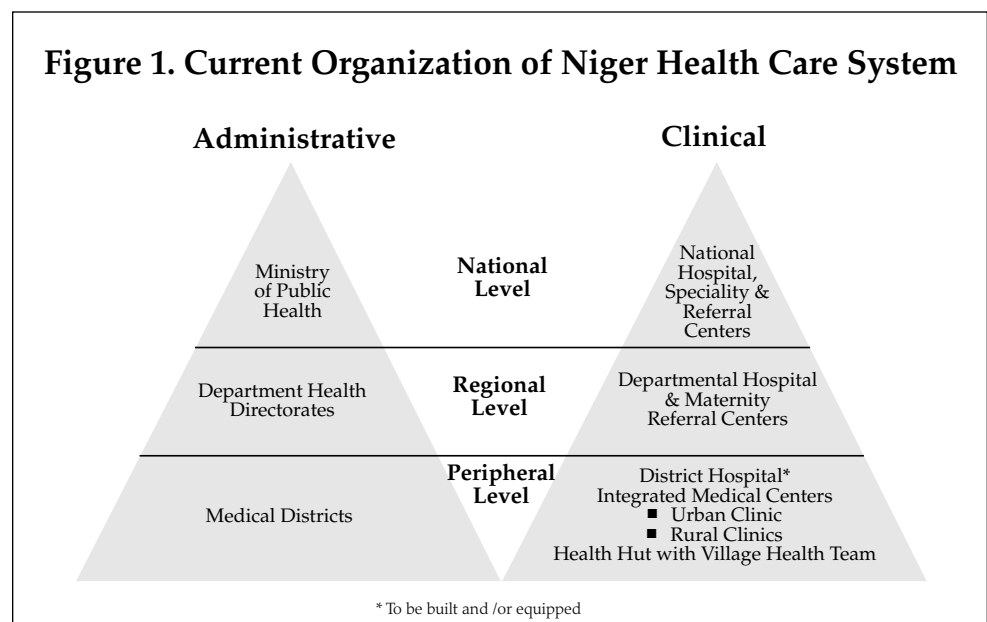
¹ Source: National Health Information Service/Ministry of Public Health

Table 1					
Phase II Target Population					
	Diffa	Dosso	Niamey	Tahoua	Total
Total population	204,621	1,318,238	555,516	1,624,314	3,702,689
Children from 0 to 11 months old	9,617	61,957	26,109	76,343	174,026
Women from 15 to 45 years old	45,017	290,012	122,214	357,349	814,592

Niger's Health System

The health system is designed according to administrative divisions. At the central level, the Ministry of Health includes central administration and external services. The central administration is comprised of the minister's cabinet, the general secretariat and seven central Directorates. The external services department includes specialized centers, teaching hospitals, national hospitals, departmental directorates of health (DHD), departmental hospital centers (DHC), medical districts, health posts, rural clinics, and neighborhood clinics. Organized around the public and private institutions, the health system includes three levels which constitute the health pyramid (see figure 1).

The bottom, or peripheral level corresponds to the Medical District (MD) which in turn consists of three levels. At the bottom is the health hut where the village or community-based health teams operate. These teams include at least two primary health care workers and two traditional birth attendants.



The second level consists of health posts (HP), rural clinics (RC) and neighborhood clinics (NC) in the large cities. The top level is the medical center (MC) which is generally comprised of a clinic, a hospital unit, a maternity unit, a maternal and child care center (MCH) and a laboratory.

The middle/regional level includes the department hospital center (DHC) and referral maternities. Located at this level is the departmental health directorate (DHD), an administrative structure providing technical support to the peripheral level health system.

The top level is endowed with specialized national services and the central directorates, including NDEPI. It is the national level which directly provides political and strategic support to the departmental level and indirectly to the peripheral level via the DHD. The national level also serves as the referral center and includes the national hospitals, the referral maternities, the national center for family health, the tuberculosis center, and the leper center.²

Table 2 below shows the number of public health facilities and pharmacies which exist in each of the regions covered under Phase II of the MI Project as well as the percentage of the population living within 5 km of a health facility.³

Table 2										
Health Facilities in the Phase II Target Areas										
Department	National Hospitals	DHC	MD	HP	RC	NC	Center	Maternities	Popular Pharmacies	% pop. < 5 km of hlth fac.
Diffa	0	1	3	3	11	0	3	6	3	37.74%
Dosso	0	1	5	4	30	1	5	10	3	30.13%
Niamey	2	0	3	0	0	16	9	7	6	106.01%
Tahoua	0	1	8	5	37	1	12	12	3	29.48%

As indicated in the table, access to health facilities is very low. Moreover, many of the existing health facilities are old and in need of repair. The table does not include private health facilities, of which there are only a few. According to NHIS, access is estimated to be 32.2% at the national level.

² Source: National Health Development Plan/Ministry of Public Health 1994

³ Source: National Health Information Service/Ministry of Public Health

Phase I Accomplishments and Point of Departure for Phase II

The Measles Initiative Project's first phase accomplished the following results, which prepared the way for the implementation of Phase II.

- Through implementation of a baseline survey and training in problem-solving techniques, the MI enhanced analytical skills of supervisors and health workers at the national, departmental, and district levels. The instruments used in the baseline have provided a basis for district-level supervisory checklists, in support of Niger's national decentralization policy.
- The MI enhanced management skills at the departmental, and peripheral levels. The project went further than any other project to date in decentralizing certain aspects of management: self-evaluation, identification of problem areas, and problem-solving.
- The project helped the national EPI program leadership at the departmental and peripheral levels and health educators at both levels improve their skills in supervision, evaluation, planning, and counseling.
- The Health Education Division of the Ministry of Health and NDEPI learned to recognize the role of the health worker as educator. Health educators at all levels first participated, then provided the leadership, planning and implementation for IEC training, evaluation, and supervision.
- Access to vaccination centers in Maradi and Tahoua was increased by opening and equipping twenty-one vaccination centers in these departments.
- At the end of Phase I (December 1993), measles vaccination coverage among children 12-23 months had risen from 13% (at baseline)⁴ to 36% in Maradi, and from 10% (at baseline)⁵ to 18% in Tahoua. Measles coverage in the rest of Niger (excluding Niamey) averaged 21.7% in 1992.⁶

⁴ Niger Demographic & Health Survey, 1992

⁵ Niger Demographic & Health Survey, 1992

⁶ Niger Demographic & Health Survey, 1992

2. Planning and Start-Up

Analysis of Major Health Risks

Based on an assessment which showed that the Departments of Tahoua and Maradi had the lowest vaccination coverage rates in the country, the project decided to focus its initial efforts in these departments. The subsequent Niger coverage survey carried out in Phase I identified two broad problems: low coverage and high drop-out rates, which combined to produce Fully Immunized Child (under one year) rates of 6% in Tahoua and 11% in Maradi, well below the national average of 19%. Measles vaccination coverage was 19% for Maradi and 16% for Tahoua. The worker performance and facility survey, mothers' knowledge, attitudes, and practices survey, and the mothers' focus groups provided information linking specific operational problems to these low rates.

Selection of Problems

Some of the major EPI process-related problems identified were: limited geographic access, inadequate communication of vaccination information to mothers with access to centers, unsatisfactory health worker-client interaction, insufficient monitoring of program performance at the peripheral level, frequent missed vaccination opportunities, irregular and often ineffectual or negative supervision, and frequent logistical problems. These problems in the EPI service delivery process were found to lead to low coverage and high drop-out rates, which in turn lead to high measles morbidity and mortality. Once underlying causes were identified, the project focused its efforts on the following strategies: 1) improving effectiveness of EPI counseling; 2) increasing problem solving and monitoring skills at the peripheral level; 3) expanding EPI services to 15 new sites; and 4) strengthening EPI supervision and monitoring systems. The identification and analysis of these problems in Phase I became the basis for the formulation of the objectives and strategies of Phase II.

Phase II Strategies

When Phase II began in October 1994, its primary objective was to increase vaccination completion rates in selected areas through a 30% reduction in drop-out rates between DPT1 and measles. Phase II efforts were focused in the Departments of Tahoua, Dosso, and the Niamey Urban Community (NUC) and sought to remedy problems related to high drop-out by employing the following strategies:

- Continue to address known causes of high drop-out identified during Phase I (poor interpersonal counseling by health workers to mothers and lack of awareness of the problem of high drop-out), improving counseling and monitoring skills of health workers.
- Identify and address additional causes of high drop-out rates by supporting a minimum of four quality improvement teams in the Department of Tahoua. During the final period of this project, assessments were done to examine measurable changes in the drop-out rate by region.
- Continue to explore avenues of collaboration with other projects such as BASICS, HKI (vitamin A/measles case management), QAP/Tahoua (application of advanced methods for process analysis and improvement, communicating and adapting EPI norms and standards), and UNICEF (strengthening supply systems) in order to improve the effectiveness, efficiency, and sustainability of the EPI delivery system.

3. Implementation

To initiate Phase II activities, a mission consisting of the Project Coordinator and representatives from the National Directorate for EPI (NDEPI), the Directorate of Family Health, and the Health Information and Education Division visited the Departments of Tahoua, Diffa and Dosso. This mission aimed to introduce the project to the DHD and their collaborators, to discuss the departments' action plans on EPI, and to identify additional activities.

Reinforcement of Personnel Competencies

Reinforcing personnel competencies to improve interpersonal skills and their ability to identify drop-out and its causes, and to better monitor progress in controlling dropout formed a major part of the project strategy. This was done through staff training, adaptation of norms and standards, and development and distribution of a wall chart job aid.

Staff Training

A desire to maximize the quality of staff training during the second phase led to a revision of the training modules developed during the first phase of the project. The revision was done by a local consultant who was also a CIMEFOR trainer, with participation of the Health Education Division of the Ministry of Health. Topics addressed through training were training of trainers in IEC, monitoring, and supervision; and training of field workers in vaccination program management, management of measles cases, IEC, monitoring, and utilization of NHIS reporting forms. The concept of integration of health services was initiated during the training in IEC, management, and monitoring organized in the Tahoua Department. These trainings included:

- training in IEC as it relates to EPI and family planning;
- training in EPI management and integrating distribution of vitamin A with measles case management; and
- training in monitoring coupled with the examination and use of NHIS reporting forms for improved collection of data.

Adaptation of Norms and Standards

EPI norms and standards were developed for use as a job aid and to guide field workers in their vaccination-related tasks. It was developed by a work

group composed of members of the Tahoua DHD, the District chief medical officer of Illéla, the manager of the health center of Guidan Idder, the resident advisor of QAP and the Measles Initiative Project Coordinator. This work group incorporated input from NDEPI and UNICEF.

Monitoring Job Aid

A wall chart to monitor the drop-out rates between DPT1 and measles vaccination was developed (see Figure 2). The chart was inspired by a Kenyan model developed under the original Measles Initiative with assistance from John Snow, Inc. It graphically plots on a monthly basis the doses administered for measles and for DPT1 and enables field workers to quickly recognize poor performance, i.e., high drop-out, and correct it.

Problem Resolution/Quality Improvement

In order for health programs to be successful, management attention must be focused on the quality of services offered. To avoid waste and offer quality services, the extent to which services respond to established standards must be determined. Quality assurance aims to improve the quality of care and services without relying solely on additional supplies, logistic support, or financial or human resources.

Quality assurance (QA) is an operational research approach which acknowledges the importance of excellence. QA provides teams with tools that allow them to evaluate their performance and support continuous improvements. Due to the interest and active participation that it generates, health workers are able to solve problems, better respond to client needs and attain and even surpass performance objectives. Quality assurance is based on the following four principles:

- emphasis on systems and processes
- basing management decision making on data
- team-based problem-solving⁷
- attending to client needs and expectations.

⁷ Team-based problem-solving is defined as a small group of members from a health facility who are trained to identify priority problems. They analyze problem symptoms to find root causes and determine solutions for eliminating or reducing problems.

Figure 2.

Republique du Niger
University Research Corporation
Programme Elargi de Vaccination
Projet Initiative de Lutte contre la Rougeole

TABLEAU DU TAUX D'ABANDONS ET MONITORING 199

DEPARTEMENT DE: CM: CENTRE DEVACCINATION:
POPULATION CIBLE DE MOINS D'1 AN: ANNUELLE : MENSUELLE:
(Dans un rayon de 0 a 5 km)

INSTRUCTIONS

- NOTER LE TOTAL MENSUEL DES DOSES DTCPI ADMINISTREES AUX ENFANTS DE MOINS D'1 AN.
- NOTER LE CUMUL POUR DTCPI (CUMUL = TOTAL DU MOIS EN COURS + TOTAUX DES MOIS PRECEDENTS).
- NOTER LES DOSES MENSUELLES DE ROUGEOLE ADMINISTREES AUX ENFANTS DE MOINS D'1 AN.
NE PAS TENIR COMPTE DES DOSES ADMINISTREES AVANT L'AGE DE 9 MOIS.
- NOTER LE CUMUL TOTAL DES DOSES POUR LA ROUGEOLE.
- SOUSTRAIRE LE CUMUL POUR LA ROUGEOLE DE CELUI POUR DTCPI. CECI DONNE LE CUMUL D'ABANDONS.
- CALCULER LE TAUX D'ABANDONS COMME SUIT:

$$\frac{\text{CUMUL TOTAL DES DOSES DTCPI} - \text{CUMTJL TOTAL DOSES ROUGEOLE}}{\text{CUMUL DES DOSES DTCPI}} \times 100$$

DOSES DE DTCPI ET ROUGEOLE ADMINISTREES	MOIS											
	JAN	FEV	MAR	AVR	MAI	JUN	JUL	AQU	SEP	OCT	NOV	DEC
DTCP-31 A. MOIS												
B. CUMUL												
ROUGEOLE C. MOIS												
D. CUMUL												
E. CUMUL ABANDONS DTCPI/ROUGEOLE												
F. CUMUL TAUX ABANDONS (%)												
60%												
55%												
50%												
45%												
40%												
35%												
30%												
25%												
20%												
15%												
10%												
Bonne performance taux d'abandons 10% ou moins												
0%												
-5%												
-10%												
-15%												
-20%												
	JAN	FEV	MAR	AVR	MAI	JUN	JUL	AQU	SEP	OCT	NOV	DEC

SURVEILLANCE DES MALADIES

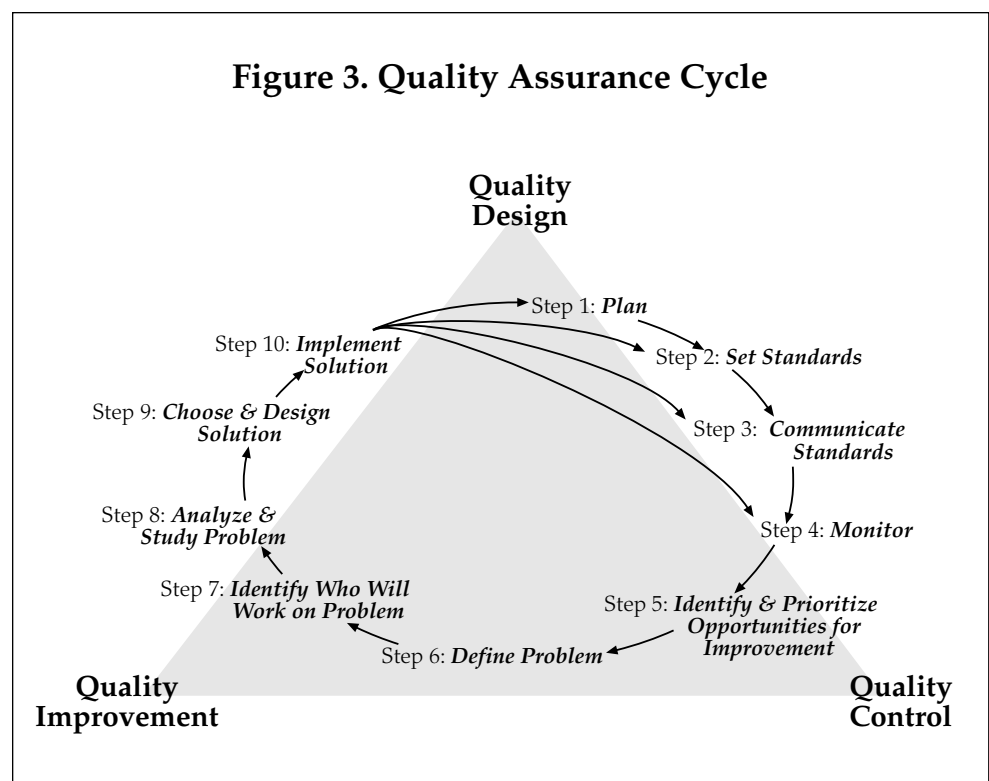
INSTRUCTIONS

A LA FIN DE CHAQUE MOIS, NOTER LE DE CAS QUI ONT ETE RECONTRES DANS VOTRE, SI AUCUN, MARQUER 0.

MALADIES	JAN	FEV	MAR	AVR	MAI	JUN	JUL	AQU	SEP	OCT	NOV	DEC	TOTAL
ROUGEOLE													
TETANOS NEONATAL													
POLIO AIGUE													

The QA cycle is a 10-step cycle (see Figure 3 below) which uses analytical tools and sometimes statistics to study and understand problems and their root causes in order to find optimal solutions. The principal tools (see Figure 3) used in Niger were the flow chart and cause and effect diagram.

- The flow chart visualizes step by step the manner in which an activity is carried out. This allows teams to identify where the problem exists.
- The cause and effect diagram, also known as the fish-bone diagram, helps the team to identify the causes and sub-causes of a problem, and once the root cause is determined, facilitates the selection of the best solution to apply to resolve the problem.



Quality Improvement at the Peripheral Level

The Phase II action plan included training personnel in the quality assurance methodology and associated problem-solving process. Since the Quality Assurance Project in Tahoua had already done a great deal of this training, it was decided that it would be more beneficial for the Measles Initiative to collaborate with QAP and to work closely with the 6 process improvement teams already trained by QAP. Each of the teams was formed on a group consensus basis and was composed of a team leader, recorder, and members of the participating health facility staff.

At each district level, a coach or facilitator was trained to regularly follow the work of the teams and to orient them. Using QA tools, these teams identified major problems in their health centers, chose a priority problem, developed and implemented local solutions to the problem, monitored the solution, and evaluated the results obtained. The project followed five quality improvement teams at the peripheral level in Tahoua Department and one in the Department of Dosso. The following is a list of the teams and the problems they selected:

- The Illéla MCH center targeted immunization drop-out.
- Guidan Idder Rural Clinic addressed high drop-out and low coverage for immunization.
- Yama Rural Clinic chose to improve utilization of well baby consultations including vaccination.
- Bagaroua Health Post identified the problem of low return rates between DPT1 and DPT3 immunization.
- Malbaza Health Post focused on service delivery by addressing the problem of poor reception conditions for mothers making clinic visits.
- The Medical District of Birni N’Gaoure in Dosso Department wanted to study the problem of chronic shortages of butane gas for refrigerators which was interrupting the regular functioning of the cold chain.

Table 3 describes the problems addressed, causes identified, solutions, and results of the peripheral level MI quality improvement teams.

Quality Improvement at the Regional Level

In order to put an end to several problems encountered in EPI in Tahoua Department, the DHD established several quality improvement teams. One of the teams addressed the supply of butane gas bottles, which are required to run

refrigerators in the vaccination centers. This multi-level team was composed of members of the DHD, the Measles Initiative coordinator, the QAP resident advisor, chiefs of medical districts, and managers of rural clinics. The team's mission was to analyze the problem and causes, propose solutions and implement them, as well as monitor and evaluate solutions.

Table 3					
Problems Addressed and Results of the Six Peripheral Level Quality Improvement Teams					
TEAM	Problem Identified	Problem Analysis Instrument	Principal Causes Identified	Solutions	Results
PMI Illela Center	<ul style="list-style-type: none"> - Low measles vaccination coverage - Elevated dropout between dtp. and measles 	<ul style="list-style-type: none"> - Analysis of vaccination data - Flow chart - Cause/effect diagram - Decision making matrix 	<ul style="list-style-type: none"> - Mother's lack of knowledge - Poor organization of sessions - Irregularity of Health Education Sessions (HES) 	<ul style="list-style-type: none"> - Individual and group HES before each vaccination session - Community HES - Construction of a covered waiting area - Home visits with active research of dropouts - Integration of services - Acquisition of benches, chairs and tables 	<ul style="list-style-type: none"> - Increase of data for all services SMI/FP - Reduction in missed opportunities - At least 80% of dropouts visited returned - Perception of reduction in personnel workload
P.M. Malbaza	Poor reception conditions for mothers to the nutrition consultations	Interview	<ul style="list-style-type: none"> - No chairs, waiting benches or water - Few locations 	<ul style="list-style-type: none"> - Involvement of community in the search for solutions - Acquisition of benches, chairs, - Acquisition of water receptacle - Construction of covered waiting areas 	<ul style="list-style-type: none"> - Multiplication of nutrition consultation sessions - Increase in use of services - Improvement in vaccination coverage
CM Birni N'Gaoure	<ul style="list-style-type: none"> - Low vaccination coverage - Frequent interruptions in gas supply 	<ul style="list-style-type: none"> - Analysis of vaccination data - Flow chart 	<ul style="list-style-type: none"> - Irregularity of vaccination sessions - Low social mobilization 	<ul style="list-style-type: none"> - No solution was implemented due to vaccination days, several meetings and seminars which required personnel to abandon the process 	

Table 3 (cont.)					
TEAM	Problem Identified	Problem Analysis Instrument	Principal Causes Identified	Solutions	Results
P.M. Bagaroua	Low return rate DPT3/DPT1	Analysis of vaccination reports	<ul style="list-style-type: none"> - Irregularity of vaccination sessions - Non-integration of vaccination to nutrition and prenatal consultations 	<ul style="list-style-type: none"> - Sensitization of women - Integration of vaccination with nutrition and prenatal consultations 	The solutions haven't been effective due to the fact that the chief didn't acknowledge the other team members from the dispensaries. He didn't understand the importance of teamwork and wanted to work alone on the problem.
DR Guidan Idder	<ul style="list-style-type: none"> - Low measles coverage of infants 0-11 months (11%) - High dropout rate (50%) 	<ul style="list-style-type: none"> - Analysis of vaccination data - Questionnaire - Cause/effect diagram - Decision making matrix - Process diagram 	<ul style="list-style-type: none"> - Lack of knowledge of vaccination calendar by mothers 	<ul style="list-style-type: none"> - Inform Mothers - Rotating vaccination sessions to cover more villages - Use of volunteers to research dropout - Integration of activities - Rearrangement of refrigerator 	<ul style="list-style-type: none"> - Significant increase in vaccination coverage from 11% to 90% - Reduction in dropout from 50% to 20% - Availability of more freezer packs
DR De Yama	<ul style="list-style-type: none"> - Low coverage in well baby visits including vaccination (18%) - Low visit average (1.24 per quarter and per infant) 	<ul style="list-style-type: none"> - Flow chart - Analysis of quarterly reports 	<ul style="list-style-type: none"> - Poor reception - Irregularity of sessions - Health worker strikes - Lack of mother's information - Interruptions in supply of vaccines 	<ul style="list-style-type: none"> - Improvement in reception - Home visits - Community information 	<ul style="list-style-type: none"> - Increase in coverage from 18% to 68% - Increase in the number of average visits per child from 1.24 to 2.08 per quarter

Table 4 shows the problem, underlying causes, solution and results of the Tahoua regional level MI quality improvement team.

Table 4					
Regional Level Team					
Team	Problem Identified	Problem Analysis tools used	Principal Causes Identified	Solutions	Results
DHD Tahoua	Interruptions in butane gas supply of one week or more experienced by nearly every center in the region during 1995	Statement of facts	The gas bottle management system doesn't allow for regular supply to the vaccination centers	<ul style="list-style-type: none"> -Revision of the management system - increase number of gas bottles in circulation in the department - installation of safety stock of gas bottles 	During the first 10 months of the new system, only 2 vaccination centers had an interruption in their gas supply and only 2 have lost one gas bottle during transport

Cold Chain Maintenance

After putting in place a new system of gas bottle distribution and management in Tahoua, the same team recommended studying the problem of refrigerator break-downs which caused suspension of vaccination services in several centers, often for long periods of time. A committee was formed to develop norms and maintenance procedures for the cold chain. Unfortunately, nationally mandated meetings, vaccination days, and other responsibilities interrupted this group, and they were unable to advance in the development of these norms and procedures by the end of Phase II.

Cold chain repair missions were undertaken by the MI Project to guarantee the continuity of vaccination in the project areas. Also a number of refrigerator repair parts were purchased by the project and delivered to the DHD of Tahoua for distribution to vaccination sites.

Information, Education and Communication

In addition to training personnel in IEC, a series of promotional activities were carried out to increase public awareness:

- A vaccination promotion pilot activity was implemented in the primary schools of Kollo District (Tillabery Department). Approximately 40 teachers were trained in essential vaccination program information. The teachers transferred the knowledge to their students who then sought out children in their family or neighborhood and led them to the health center to complete their vaccination cycle. The NDEPI carried out an evaluation of this activity, but the results were not conclusive since the evaluation coincided with school vacations. As a result, it was impossible to properly evaluate this activity before the close of the project.
- Messages promoting vaccination service utilization were produced and broadcast by radio in Niamey as well as in Tahoua.
- Quarterly vaccination education campaigns were undertaken in Niamey by social workers from the Ministry of Social Development.
- At the request of the NDEPI, posters were produced and distributed to vaccination center personnel to be used as visual aids to increase awareness.

Access

The project supported several activities aimed at improving the accessibility and availability of vaccination services.

Support Activities to Accelerate Vaccination and to Control Epidemics

The project contributed to the nation-wide strategy of intensive vaccination campaigns. Funds were also made available for fuel, community education, T-shirts (Tahoua), and a supervision visit to Dosso and Tillabery. Fuel support was provided to the Health Department of the Niamey Urban Community in support of a campaign to reduce the spread of measles during the 1995 epidemic.

Support for Outreach and Improved Amenities

In order to bring more services to people, the project repaired the motorcycle of the Guidan Idder District. This allowed the nurse to go into the neighborhoods and surrounding villages, thereby increasing client access to vaccination services.

When activities increased due to integration of services into daily health center activities, the project furnished the Medical Center of Illéla with tables, benches and chairs in order to allow the personnel and clients a minimum of comfort.

Support to NDEPI

In response to an urgent request from the NDEPI, the MI Project provided gas pipes, fuel, and printer ink cartridges.

4. Results

Reinforcement of Personnel Competencies

Training

Three training modules were produced, covering IEC, monitoring, and supervision techniques. These modules served as the basis for different training interventions in the departments. The training activities allowed each department to develop a team of trainers in the three main areas cited above. The MI training also allowed field personnel to acquire knowledge necessary to improve the provision of vaccination services. Unfortunately, due to personnel transfers throughout the year, some departments no longer have a complete team.

Table 5 summarizes by topic and by department, the training activities carried out over the course of Phase II of the project and the number of participants trained in each. Apart from training in supervision, all others were completed.

Training in supervision was not conducted due to the high demand on personnel time for other requirements such as intensive vaccination campaigns, mandatory meetings, and other training.

Table 5					
MI Phase II Training Number Trained by Department and Subject					
Topic	Diffa	Dosso	Niamey/ NDEPI	Tahoua	Total
Trainers-IEC	1	1	2	1	5
Trainers-monitoring/ supervision	2	2	2	2	8
IEC	21	40	60	33	154
Monitoring	0	43	40	0	83
Vaccination management/ measles case management	0	0	0	22	22
NHIS/monitoring	0	0	0	72	72
Total	24	86	104	130	344

The Department of Diffa conducted few trainings. This was due to the fact that the managers were not able to execute the action plan that they themselves developed. For example, the only training in IEC that was carried out encountered many logistical problems. Unable to resolve the internal management issues within Diffa Department, the Measles Initiative was obliged to limit assistance to that region.

A summary evaluation of the monitoring and data collection training was done in Tahoua and Dosso Departments. This evaluation was based on results from the wall chart monitoring job aid. According to the leadership of the Epidemiology Surveillance Center in Tahoua, an improvement is evident in the monitoring reports filled out for NHIS. The results should be interpreted cautiously, since the evaluation occurred only 2 to 3 months after the training, and health workers did not have time to collect the data needed for the evaluation.

Monitoring Drop-out Rates

The wall chart to monitor vaccination service drop-outs was also evaluated. The evaluation showed that in the Department of Tahoua, of 22 centers visited, 18 centers had the chart, but only 6 were using it correctly. In the Department of Dosso, of 10 centers visited, only 2 were actually using the chart. In both departments, the evaluation revealed that apart from the health workers trained, no one knew how or why to fill out the chart since there had been no sharing of knowledge by those trained in its use. Since the period between the training and the evaluation was relatively short it is difficult to draw conclusions about the expansion of its use within the centers. A longer delay period is needed to determine whether or not the health workers perceived the necessity and utility of the chart, or if there was an unwillingness on the part of health workers to use the chart and if so, why.

Adaptation of Norms and Standards

The document “Norms and Standards of EPI-Niger” was finalized and placed in 20 centers of the Tahoua Department as a pilot test. The Quality Assurance Project has taken over follow-up and evaluation. If the results from the evaluation are favorable, the document will be distributed nationally by the NDEPI.

Problem Resolution/Quality Improvement

Quality improvement activities were conducted primarily in Tahoua, where teams trained in quality improvement already existed and there was an established structure within which to operate. The MI Project worked with these teams on EPI service delivery issues, with the assistance of the QAP/Tahoua team. In spite of difficulties encountered, the results obtained were encouraging.

Only two teams, Bagaroua (Illéla District) and Birni N’Gaoure (Dosso Department), did not advance in their process. The remaining teams completed a QA cycle through to the evaluation phase of their solutions. The teams of Guidan Idder, Illéla, Yama and Malbaza presented the results of their work at the conference organized by the Quality Assurance Project in Tahoua on December 11 to 13, 1995. The presentations were impressive, presented clearly, and well defended by the teams.

Tahoua Team

1994 was marked by several interruptions in supply of butane gas lasting one week or more. As a result, the DHD of Tahoua decided to use the quality assurance approach to analyze the problem and identify appropriate solutions. After analyzing the problem and its causes, a certain number of solutions were identified and applied. Chief among these were the institution of a supplemental stock at the district levels and the institutionalization of a new gas bottle management system region-wide. An evaluation of the new gas bottle management system concluded that at the end of 10 months, only 2 centers experienced an interruption in gas supply lasting a few days and only 2 bottles were misplaced during transport.

Illéla Team

The Illéla team studied the problem of low measles coverage and drop-out and implemented the following solutions:

- Integration of MCH services
- Individual and group health education before each vaccination session
- Home visits to look for those who dropped-out
- Awareness-raising in the neighborhood and villages of the area

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- Construction of covered waiting area
 - Acquisition of benches, chairs, and tables.

Following the implementation of these solutions, the team obtained these results:

- Services were made available on a daily basis to all
- Development of team spirit among health workers
- Perception of a decrease in the work load
- Increase of data for all services SMI/FP
- Significant increase in preventive activities. In fact, vaccination coverage nearly doubled between the first and second quarter of 1995 once the solutions were implemented.

It was believed that this increase in immunizations resulted from the intervention of vaccination campaigns during the second quarter of 1995. However, the analysis of data of well baby visits and prenatal visits also showed a substantial increase.

As for the active search for drop-outs, 80% were located and returned to clinic. There was difficulty finding the rest of the children, since addresses were not recorded on the health record at the time of their initial vaccination visit. Now more conscious of the need for such information, health workers have improved record-keeping.

Guidan Idder Team

After analysis of the problem of low measles coverage for children 0-11 months and high dropout, the following solutions were considered:

- Census and active search for those who dropped out
- Inform mothers in neighborhoods and surrounding villages of the importance of vaccination
- Establishment of a rotating calendar of vaccination sessions to cover more neighborhoods and villages
- Increased number of weekly vaccination sessions
- Rearrangement of the refrigerator

The simultaneous absence of certain team members due to other training activities slowed team progress. This situation resulted in the clinic chief skipping some essential steps in the problem analysis process. Fortunately the team's coach realized this problem and guided them back to a new improved planning process resulting in the following results. The measles vaccination coverage in fixed sites for children less than 1 year was approximately 18% in January 1995 and close to 90% at the end of 1995. The total drop-out DPT1/Measles fell from 50% to 20%. Innovation in organizing the refrigerator allowed the center to have a dozen freezer packs available constantly and to be able to vaccinate on a daily basis.

Yama Team

This team studied well baby visits but in the beginning omitted of several steps of the service process, notably vaccination which had been suspended for 6 months due to breakdown of the refrigerator. As a result, the team had to redefine the problem, redo the process diagram and identify again new criteria for quality. The team continued to apply solutions (informing about the program and the importance of followup) which have already been helpful. Measles vaccination coverage increased from 18% in the fourth quarter of 1994 to 68% in the second quarter of 1995.

Bagaroua Team

Analysis of health center vaccination reports showed a low return rate between DPT1 and DPT3, so the team decided to take corrective actions. The proposed measures were increasing awareness of women and integrating vaccination into prenatal and well baby visits to reduce missed opportunities and to identify and vaccinate children having dropped out. Unfortunately, the process did not fully evolve because all members of the health center team were not involved in the process. Due to misunderstanding about the team-based approach to problem-solving, the person in charge of the health center wanted to work alone on the problem and didn't agree with the identified solutions.

Malbaza Team

This team studied the problem of poor reception conditions for mothers coming to the clinic. An interview with 30 women chosen at random showed 63% of cases experienced poor reception conditions at this health facility. The shelter at the health center was very small and did not have enough benches or

chairs to allow clients and personnel a minimum of comfort. The health center team joined with community leaders including women in order to examine the problem and reflect on the following solutions:

- Acquisition of benches and chairs
- Acquisition of drinking water
- Construction of a covered waiting area
- Increase in well baby visits.

A mid-term evaluation showed that 56% of women were not always happy with reception conditions. However, it also showed that implementation of solutions improved service utilization from 54% to 76%.

Birni N'Gaoure Team

When the first BASICS/MI mission observed the team it was at the solution identification and selection stage. The team which initially followed the WHO approach because the assistant district chief had been trained in it, focused at first on the problem of interruptions in the butane gas supply. Then the new district chief came from Tahoua and reoriented the team and the assistant to the QA methodology. When the second BASICS/MI mission observed the team it had abandoned its problem solving process and began focusing on the overall problem of low vaccination coverage. A new problem-solving team made of the medical district chief, his assistant, and persons in charge of various medical center units was established and they set up a meeting schedule (every Wednesday afternoon). The process was abandoned again however, due to competing responsibilities of the personnel.

Cold Chain Maintenance

The department-level committee formed in Tahoua for this effort was not able to continue its work to solve refrigerator breakdowns and develop norms and maintenance procedures, due to other overriding responsibilities. The committee accomplished the first draft of the situation analysis before it was suspended due to the unavailability of most members. Nevertheless, the committee is committed to undertaking the work and is looking to identify resources from QAP/Tahoua to help it resume activities.

Information, Education and Communication

Besides the use of students to reach vaccination drop-outs, no other IEC activities were evaluated. The reason the radio spots were not evaluated was because they were broadcast at the same time vaccination days were held by the NDEPI and the results would have been inconclusive.

Access

Encouraging results have been obtained in Tahoua since the number of butane gas bottle shortages has diminished, and since integration of vaccination with other preventive and curative services began in about 20 centers of the 55 in the Department of Tahoua. Vaccination sessions have increased from 1-2 to 3-5 times per week, depending on the center.

The project also assisted in reopening 4 vaccination centers: 2 in the District of Tchintabaraden (Tahoua) and 2 in Birni N’Gaoure (Dosso). The project furnished the centers with missing gas pipes and fuel, the lack of which had previously caused several months suspension in activities.

5. Vaccination Coverage

To evaluate vaccination coverage, data were obtained from each of the Departmental Health Directorates. These data are presented in Annex A of this report and show vaccination coverage of the target population living within 5 km of health facilities in the MI Project areas.

Table 6 below summarizes the vaccination data for Tahoua Department for the years 1992 to 1995. It shows vaccination coverage rates have improved over the project's two phases for children 0-11 months old residing within the radius of 0-5 km of fixed facilities in the department of Tahoua. The improvements are encouraging, but global coverage rates are still insufficient given that only 30% of the total population of the department has access to a health facility. The total drop-out between DPT1 and measles remains rather high even considering the decline from 1994 to 1995.

Table 6				
Vaccination Coverage Rates in Tahoua Department, 1992-1995				
Vaccination	1992	1993	1994	1995
BCG	40%	48%	68%	92%
DPT1	35%	47%	67%	87%
DPT3	17%	27%	39%	55%
Measles	24%	32%	42%	63%
Dropout DPT1/Measles	31%	32%	37%	28%

Source: ESC/DHD Tahoua

Despite all efforts up to now, examination of the health district data indicates the following about the performance of vaccination services:

- An insufficient target population coverage rate, particularly for DPT3 and measles. There seems to have been a dilution of efforts in that children up to age 5 were targeted rather than concentrating exclusively on infants under one year. There were also numerous missed opportunities which had they been exploited, would have improved coverage. A reorganization

of services is needed throughout the Department in order to make services permanent and integrated.

- Persistently high drop-out between DPT1 and DPT3 and between DPT1 and measles. These drop-out rates are often negative in the Niamey Urban Community indicating that measles vaccine was administered more often than DPT1. Some possible reasons for this are that faced with an epidemic, some vaccination teams administered measles vaccine without administering the other antigens, or the double doses of measles vaccine at 6 and 9 months were counted, or children over one year were counted among those under one year, or there may have been a shortage of DPT vaccine during the period in consideration.
- The number of doses administered fluctuated from region to region, district to district, areas within a region, and quarter to quarter.
- Vaccination figures were sometimes higher than the target population, which indicates either poor demographic data (population coming from further than 5 km but still counted in fixed strategy) or an error in number of doses administered (children older than 11 months counted among infants under one year).

6. Difficulties and Major Constraints

A number of major constraints and challenges encountered by the MI Project made implementation more difficult. Some of the principal constraints were:

- A delay in project start-up which made the second phase too short to properly execute a number of project activities or to allow sufficient time for an evaluation of results.
- Financial constraints that did not allow adaptation of interventions at the local level.
- The project action plan did not take into account the need to equip new vaccination centers with cold chain and vaccination materials in order to distance the fixed facility strategy from a bad perception of project interventions by field workers who face insufficient resources.
- Non-involvement in outreach strategies (transport, fuel) which would have allowed greater coverage of target populations.
- A wait-and-see policy of regional officials in Diffa who despite their action plan, do not initiate actions on their own.
- Outbreaks of epidemics which require concentrated effort of all personnel to the detriment of other antigen administration and disruption of routine activities.
- Canceled vaccination days and missed opportunities due to too many required meetings and other obligations which leave managers unavailable for field work.
- Staff overburdened with personal, financial and material concerns are left with little motivation for service activities.
- Management principles of the project are often misunderstood by the health staff and present a conflict.
- Limited health system resources included an insufficient number of vaccination centers and an old and insufficient number of vehicles.
- Operational funds at the districts, which are already insufficient, have become even more difficult to obtain.

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- Lack of coordination among donors which is necessary in order to avoid duplication of efforts and waste.
 - Slow justification of resources allocated to the regions.
 - Civil unrest causing the closing of some centers and reducing the already insufficient number of available centers.
 - Mobility and turnover of staff.
 - Work stoppages due to civil service strikes, especially in 1994 when strikes lasted 2 consecutive months and disruptions in vaccine availability prevented execution of several vaccination sessions.

7. Conclusions

Working in a context as difficult as that facing the Niger EPI Program, a project which doesn't intervene in the area of vaccine and supply logistics, gas for outreach strategies, and the acquisition of equipment for the opening of new vaccination centers, can achieve only modest results. The MI activities described in this report could have only an indirect effect on vaccination coverage, which is still dependent on several external factors, mainly the motivation of personnel, availability of vaccines, and the regular functioning of services.

Despite this fact and the whole range of difficulties and constraints described above with regards to the action plan and the short duration of the project's second phase, it is important to note that significant results have been achieved. The success achieved by certain problem-solving teams is encouraging. This is particularly true for the Guidan Idder team whose measles coverage rate for fixed strategies for children under one year old increased from 11% in January 1995 to nearly 90% at the end of the same year. The new butane gas bottle management system put in place in Tahoua Department reduced the frequent disruptions in gas supply and diminished the number of lost bottles, thereby increasing the availability of vaccination services. Utilization of the wall monitoring chart also has the potential to help the health workers discover the problem of drop-out and to develop appropriate solutions.

The following experience should also be acknowledged:

- Integration of vaccination with other health care activities, which is being tried in about 20 vaccination centers of the Department of Tahoua, has shown unequivocally its advantages for providers as well as for clients.
- Making personnel aware of the problems of their health center stimulates the desire for improvement without even going through the problem-solving process.
- While analysis, interpretation and use of data to improve vaccination service performance has taken hold, still more effort is needed to improve data collection.

8. Recommendations

The following steps are recommended to assure the consolidation of gains achieved by the Measles Initiative Project:

- Continue team follow-up by QAP/Tahoua to ensure consolidation of gains.
- Explore opportunities with professional schools of health to include problem resolution and monitoring courses into their curricula.
- Integrate the quality assurance approach into the supervision of health clinics.
- Assure regularity of supervision, particularly at the district level. This means planning supervision visits and respecting the schedule as much as possible. Also, supervision should be much more training-oriented than it is currently.
- Reduce the mobility of personnel by maintaining each worker in his post for a minimum of 3 years and decentralize authority for reassigning personnel from the central level to the Department Directorates.
- Encourage personnel to improve the collection of data and to better utilize the data for self-evaluation and action.
- Review strategies and channels of communication for better community education and utilization of services.
- Accelerate the process of decentralization of vaccination services by providing latitude to regions to research financing, and to plan, organize, follow-up and evaluate their activities in a competitive spirit.
- Integrate EPI data collection with other areas of primary health care and improve demographic data to facilitate recognition of where the clients are coming from (0-5km and more than 5 km).
- Promote the optimal use of the refrigerator RCW 42 as done in Guidan Idder. This will allow every center to have enough freezer packs for daily vaccination activities.
- NDEPI should improve coordination among donors to avoid waste and duplication.

Annex A

Vaccination Coverage in Measles Initiative Project Areas 1994 and 1995 (% of infants 0-11 months living within 5 km of a health facility)								
Tahoua Department								
District	1994				1995			
	DPT1	DPT3	Meas.	Drop-out*	DPT1	DPT3	Meas.	Drop-out*
Bouza	73	29	35	52	58	30	26	55
Illela	66	41	41	39	76	53	49	35
Keita	35	13	20	43	83	48	59	29
Konni	53	40	40	27	90	61	67	25
Madaoua	47	22	21	55	66	37	42	37
Tahoua	136	91	93	31	140	98	118	16
Tchintabaraden	69	45	54	22	92	53	80	13
Overall	67	39	42	37	87	55	63	28
*DPT1/Measles								
Niamey Urban Community								
District	1994				1995			
	DPT1	DPT3	Meas.	Drop-out*	DPT1	DPT3	Meas.	Drop-out*
Commune 1	53	44	37	30	70	59	75	-8
Commune 2	41	34	30	27	63	52	44	30
Commune 3	78	62	57	26	98	89	110	-12
Overall	49	41	35	28	69	59	63	8
*DPT1/Measles								
Dosso Department								
District	1994				1995			
	DPT1	DPT3	Meas.	Drop-out*	DPT1	DPT3	Meas.	Drop-out**
Boboya	42	24	39	8	97	52	75	36
Doutchi	42	24	39	8	53	33	28	47
Dosso	81	64	60	27	88	66	65	26
Gaya	51	28	30	42	99	68	55	45
Loga	113	69	64	43	116	94	76	34
Overall	64	38	38	41	80	54	49	38
*DPT1/Measles								